

(19)



JAPANESE PATENT OFFICE

PATENT ABSTRACTS OF JAPAN

(11) Publication number: **07240374 A**

(43) Date of publication of application: **12.09.95**

(51) Int. Cl.

H01L 21/205

(21) Application number: **06030067**

(22) Date of filing: **28.02.94**

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(54) **III-V GROUP COMPOUND SEMICONDUCTOR CRYSTAL**

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(57) Abstract:

PURPOSE: To obtain a high quality III-V group compound semiconductor crystal layer by forming a zinc oxide crystal layer on almost rounded sapphire-made substrate so as to grow the III-V group compound semiconductor layer on the zinc oxide crystal layer.

CONSTITUTION: The III-V group compound semiconductor crystal is composed of a III-V group compound semiconductor crystal 3 grown on a zinc oxide crystal 2 previously grown on an almost rounded sapphire-made substrate 1. In such a constitution, the III-V group compound semiconductor crystal 3 is represented by the formulas as shown below, i.e., GaN, $Al_xGa_{1-x}N$ ($0 < x < 1$), $In_xGa_{1-x}N$ ($0 < x < 1$), $In_xGa_yAl_{1-x-y}N$ ($0 < x < 1$), $In_xGa_yAl_{1-x-y}N$ ($0 < x < 1$, $0 < y < 1$, $0 < x+y < 1$), $In_xGa_{1-x}N_yP_{1-y}$ ($0 < x < 1$, $0 < y < 1$) or $In_xGa_{1-x}N_yAs_{1-y}$ ($0 < x < 1$, $0 < y < 1$), GaN_yP_{1-y} ($0 < y < 1$) GaN_yAs_{1-y} ($0 < y < 1$). Meeting the requirements for above formulas, high quality low cost light emitting element can be realized.

